

## PATENT ABSTRACTS OF JAPAN

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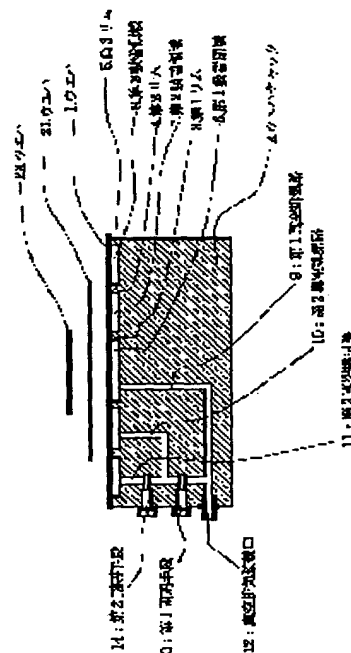
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## (54) WAFER CHUCK

## (57)Abstract:

PURPOSE: To provide a wafer chuck wherein wafers whose size is different are sucked and held and their planes can be corrected.

CONSTITUTION: In a wafer chuck, semiconductor wafers 1, 21, 22 are mounted, and the wafers are sucked and held on their mounted face by means of a vacuum pressure. In the wafer chuck, the face on which the wafers are mounted is divided into a plurality of mutually independent suction regions 6, 7, 8, vacuum evacuation passages 9, 10, 11 which are connected to the individual suction regions are formed, and vacuum-pressure supply opening and shutting control means 13, 14 to the individual suction regions are installed on a vacuum evacuation passage.



## LEGAL STATUS

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**CLAIMS**

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[Claim(s)]

[Claim 1] The wafer chuck characterized by having divided the loading side of the aforementioned wafer into the adsorption field which became independent to mutual [ two or more ] in the wafer chuck which carries a semiconductor wafer and carries out adsorption maintenance of this wafer on a loading side by vacuum pressure, having prepared the evacuation way which is open for free passage to each adsorption field, and preparing the vacuum pressure supply opening-and-closing control means to each adsorption field in this evacuation on the street.

[Claim 2] Two or more aforementioned adsorption fields are the wafer chucks of the claim 1 characterized by being formed in the shape of a concentric circle.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the wafer chuck which carries out adsorption maintenance of the wafer by vacuum pressure, especially concerning the wafer chuck for semiconductor exposure.

[0002]

[Description of the Prior Art] Drawing 3 is the cross section of the conventional wafer chuck. A rim 33 is formed in the periphery of the wafer chuck 32, and two or more pins 34 are set up inside the rim 33. The same flat surface is made to the aforementioned rim 33 and a pin 34, if a wafer 31 is laid on this field, a vacuum chamber 35 will be formed, by carrying out evacuation from a nipple 36, vacuum adsorption is carried out and flat-surface reform of the wafer 31 is carried out.

[0003]

[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional technology, since the inside whole region of the periphery rim 33 was one independent adsorption field, when it cannot adsorb since the wafer of a path smaller than the diameter of a periphery rim is leaked, but changing wafer size, it had the fault that the whole wafer chuck had to be exchanged.

[0004] this invention is made in view of the fault of the above-mentioned conventional technology, and adsorption maintenance of the wafer of different size is carried out, and it aims at offer of a wafer chuck which can carry out flat-surface reform.

[0005]

[Means for Solving the Problem and its Function] In order to attain the aforementioned purpose, according to this invention, it becomes possible to carry out adsorption maintenance of two or more kinds of wafers with which sizes differ by the wafer chuck of a piece by establishing the evacuation way which leads to each of the adsorption field where plurality became independent, and this adsorption field, and a means to open and close this evacuation way.

[0006]

[Example] Drawing 1 is the cross section of the example of this invention, and drawing 2 is the plan. In drawing in 1, a wafer and 2 the 1st rim and 4 for a wafer chuck and 3 The 2nd rim, The 1st adsorption field where 5 was surrounded by the 3rd rim and 6 was surrounded by the 1st rim 3, the 2nd adsorption field where 7 was formed between the 1st rim 3 and the 2nd rim 4, The 3rd adsorption field where 8 was formed between the 2nd rim 4 and the 3rd rim 5, the 1st evacuation way where 9 leads to the 1st adsorption field 6, The 2nd evacuation way where 10 leads to the 2nd adsorption field 7, the 3rd evacuation way where 11 leads to the 3rd adsorption field 8, The 1st opening-and-closing means for the evacuation end connection for 12 making exhaust air way

connection with the external source of vacuum pressure through each above-mentioned evacuation ways 9, 10, and 11 and 13 opening and closing the above-mentioned 2nd evacuation way 10 and the 3rd evacuation way 11 and 14 are the 2nd opening-and-closing meanses for opening and closing the above-mentioned 3rd evacuation way 11. [0007] In the above-mentioned composition, if the 1st opening-and-closing means 13 and the 2nd opening-and-closing means 14 are changed into an open state, duct connection of the 1st, the 2nd, the 3rd evacuation way, and 9, 10 and 11 is made at the evacuation end connection 12, and the 1st, the 2nd, and the 3rd adsorption fields 6, 7, and 8 will be in the state in which vacuum adsorption is possible altogether. If the wafer 1 which suited the outer diameter of the 3rd rim 5 in this state is laid, adsorption maintenance of the whole surface will be carried out, and flat-surface reform of the wafer 1 will be carried out.

[0008] moreover -- if the 1st opening-and-closing means 13 is changed into an open state and the 2nd opening-and-closing means 14 is made into a closed state -- the -- the 1 2nd adsorption fields 6 and 7 will be in the state in which vacuum adsorption is possible if the wafer 21 which suited the outer diameter of the 2nd rim 4 is laid according to the 2nd rim 4 in this state -- a wafer 21 -- the -- to the 1 2nd adsorption fields 6 and 7, adsorption maintenance is carried out and flat-surface reform of the whole surface is carried out At this time, since the 2nd opening-and-closing means 14 has closed, the 3rd adsorption field 8 is not leaked.

[0009] Similarly, if the 1st and the 2nd opening-and-closing meanses 13 and 14 are made into a closed state, only the 1st adsorption field 6 will be in the state in which vacuum adsorption is possible. If the wafer 22 which suited the outer diameter of the 1st rim 3 is laid in this state according to the 1st rim 3, to the 1st adsorption field 6, adsorption maintenance of the whole surface will be carried out, and flat-surface reform of the wafer 22 will be carried out. this time -- the 2nd and the 3rd adsorption fields 7 and 8 -- the -- since the 1 2nd opening-and-closing meanses 13 and 14 have closed, it does not leak

[0010] In the 1st example of the above, although the number of two or more independent adsorption fields was three, there may be how many. Moreover, which methods, such as a pin contact method or an adsorption slot method of the conventional example, are sufficient as the adsorption method in the each independent adsorption field, and it may use together a different method for every field. Moreover, although the evacuation way opening-and-closing means is built in the chuck in the above-mentioned example, it is also possible to prepare an evacuation way opening-and-closing means in the chuck exterior.

[0011]

[Effect of the Invention] It becomes possible to carry out adsorption maintenance of two or more kinds of wafers with which sizes differ, and to carry out flat-surface reform by the wafer chuck of a piece, by establishing a means to open and close the evacuation way which leads to each of the adsorption field where plurality became independent, and this adsorption field in the wafer chuck concerning this invention, and this evacuation way, as explained above. Thereby, when using the wafer of variety size in a semiconductor aligner etc., exchange of a wafer chuck is not needed, but it can respond to the wafer of varieties by the wafer chuck of a piece, and cost cut of equipment and improvement in productivity are achieved.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the cross section of the wafer chuck concerning the example of this invention.

[Drawing 2] It is the plan of the wafer chuck of drawing 1 .

[Drawing 3] It is the cross section of the conventional wafer chuck.

[Description of Notations]

1, 21, 22; wafer, 2; wafer chuck, and 3; -- the 1st rim and 4; -- the 2nd rim and 5; -- the 3rd rim, the 6; 1st adsorption field, the 7; 2nd adsorption field, the 8; 3rd adsorption field, the 9; 1st evacuation way, and 10; -- the 2nd evacuation way, the 11; 3rd evacuation way, 12; evacuation end connection, 13; 1st opening-and-closing means, and the 14; 2nd opening-and-closing means

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[Translation done.]